Source Water Assessment Program (SWAP) Report For West Tisbury Elementary School

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: July 18, 2001

Table 1: Public Water System (PWS) Information

PWS NAME	West Tisbury Elementary School
PWS Address	Old County Road
City/Town	West Tisbury, Massachusetts
PWS ID Number	4296005
Local Contact	John Powers
Phone Number	508-696-0105

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	4296005-01G	172	467	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The West Tisbury Elementary School is a public water supply currently serving a population of 465 students and staff. The School is served by Well #1 that is located on the northern edge of the school' s athletic field. Well #1 is 6-inch diameter well drilled to final depth of 115 feet. The well is located in a sand and gravel aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e. Clay) that can prevent contaminant migration. The well was developed under the Department's new source approval process in 1996. The average daily withdrawal for the well is limited to 3000 gallons per day, based on the current Zone I of 172 feet and the Interim Wellhead Protection Area (IWPA) of 467 feet. The IWPA provides a protection area for a water supply when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. A diesel

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

generator provides emergency power.

On December 17, 1997, the Department approved a treatment system for corrosion control for the well serving the West Tisbury Elementary School. The system utilizes calcite as a filter media to adjust the pH of the water. For current information on monitoring results and treatment, please contact the public water system contact person listed above in Table I.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Inappropriate Activities in Zone Is;**
2. **An Underground Storage Tank (UST) With Heating Oil; and**
3. **Storage and Use of Oil/Hazardous Materials.**

The overall ranking of susceptibility to contamination for the well is high, based on the presence of at least one high threat land use or activity in the IWPA, as seen in Table 2.

1. **Zone Is –** Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contains athletic fields and playgrounds. The public water supplier does own and/or control all land encompassed by the Zone 1. Currently, no fertilizer is used within the Zone I, according to school staff. Please note that systems and not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

   Recommendations:

✓ Keep non-water supply activities out of Zone I.
✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. **Underground Storage Tank (UST) –** There is a 6000 gal. UST fuel tank located approximately 400 feet Southeast of Well #1. The tank is double walled, with cathodic protection and leak detection. If managed improperly, an UST in IWPA containing petroleum products is a concern due to the potential threat posed by release of large quantities of fuel.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Fuel Storage Below Ground	No	Well #1	High	6000 gal. heating oil tank
Storage and use of oil/hazardous materials	No	Well #1	Moderate	Small quantities of gasoline, lubricants and cleaning supplies
Athletic Field	Well #1	Well #1	Moderate	Continue not to use fertilizer or pesticides in Zone I
Fuel Storage Above Ground	No	Well #1	Moderate	Diesel tank for generator is double walled with secondary containment
Transformer	No	Well #1	Low	
Industrial Wastewater to septic system	No	No	-	Non-sanitary waste to septic system from labs
Structures	No	Well #1	-	Non-water supply structures in Zone I

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use /**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

Recommendations:

- ✓ Routinely check vacuum pressure gauge located in the basement of school.
- ✓ During refilling of UST, ensure that the operator of the oil transport tanker does not leave the vehicle while the UST is being filled.
- ✓ Ensure that the delivery operator has determined the tanks available oil capacity to prevent overfilling (refer to 527 CMR 8.00).
- ✓ Consult with the local fire department for any additional local code requirements USTs.

3. **Hazardous Waste/Material Storage in IWPA** - Boiler treatment chemicals, petroleum products (e.g. gasoline, lubricants, etc.) janitorial supplies and other chemical storage are located in the school basement.
   Recommendation Implemented:
   - ✓ The public water supply certified operator has instructed school staff to remove all cleaning supply supplies and potentially hazardous materials from the basement areas to areas that have containment.

Other activities noted during the assessment: There is a backup generator that has a double walled AST for diesel fuel storage. The generator and AST are located approximately 400 feet south-southwest of Well #1. If managed improperly, an AST in the IWPA containing petroleum products is a concern due to the potential threat posed by a release of large quantities of fuel. Conduct regular inspections of the Zone I. Look for evidence of vandalism and check above ground tanks for leaks.

There is one transformer located approximately 200 feet south of Well #1. All electrical transformers contain oil and depending on the age of the transformer, the oil may contain PCBs. For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement.

According to school staff, discharge from the science classroom is routed to an acid neutralization tank and finally to the on-site septic system. Science classroom waste is considered industrial wastewater and is required to go to tight tank or sewer. Please contact Frank Mezzacappa in the Department's water pollution control section at telephone # (508) 946-2723 in order to discuss your management options.

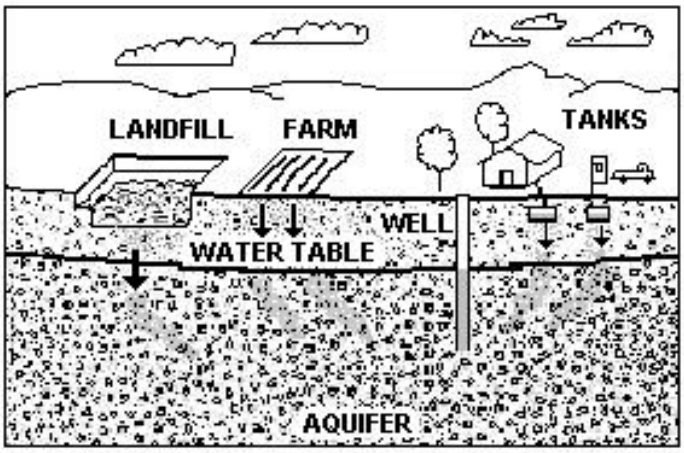

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the Well #1 susceptibility to contamination. Drinking water protection signs have been posted at the facility. West Tisbury Elementary School should review and adopt the **key recommendations** above and the following:

Zone I:

- ✓ Prohibit public access to the well through locking facilities, and gating roads.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, and check any above ground tanks for leaks, etc.

For More Information:

Contact *Mark Dakers* in DEP's Lakeville Office at 508-946-2847 more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, and the local media.

- ✓ Continue to not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- ✓ Work with your community to ensure that stormwater runoff is directed away from the well and is treated according to DEP guidance. Roof runoff from the school is transported to a below ground storm water infiltration field located approximately 400 feet south-southwest of Well #1.

Facilities Management:

- ✓ Septic system leaching fields are not located in the IWPA for Well #1. The Department recommends that septic system components should be located, inspected, and maintained on a regular basis.

Planning:

- ✓ Work with local officials in West Tisbury to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure
- Pesticide Use Fact sheet
- Fertilizer Use Fact Sheet
- Industrial Floor Drains Brochure
- Healthy Schools Fact Sheet
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form